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<110> Bristol-Myers Squibb Company
<120> Novel Organic Anion Transport Proteins
<130> DB23 DIV1
<140> US 10/736,936
<141> 2003-12-16
<150> US 09/575,081
<151> 2000-05-19
<150> US 60/135,081
<151> 1999-05-20
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Arg Trp Val Gly Ala Trp Trp Leu Asn Phe Leu Val Ser Gly Leu Phe			
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Lys Ser Ser Ile Ile His Ile Glu Arg Arg Phe Glu Ile Ser Ser Ser
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Leu Val Gly Phe Ile Asp Gly Ser Phe Glu Ile Gly Asn Leu Leu Val
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Ile Gly Ile Gly Cys Phe Ile Met Gly Ile Gly Gly Val Leu Thr Ala
100 105 110

Leu Pro His Phe Phe Met Gly Tyr Tyr Arg Tyr Ser Lys Glu Thr Asn
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Gly Asn Met Leu Arg Gly Ile Gly Glu Thr Pro Ile Val Pro Leu Gly

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185

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Thr His Cys
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Asp Val Arg Pro Ser Val Phe His Asn Ile Lys Leu Phe Val Leu Cys
20 25 30
cac agc ctg ctg cag ctg gcg cag ctc atg atc tcc ggc tac cta aag 322
His Ser Leu Leu Gln Leu Ala Gln Leu Met Ile Ser Gly Tyr Leu Lys
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Ser Ser Ile Ser Thr Val Glu Lys Arg Phe Gly Leu Ser Ser Gln Thr
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Val Phe Val Ser Tyr Phe Gly Ser Arg Val His Arg Pro Arg Met Ile
85 90 95

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Gly Tyr Gly Ala Ile Leu Val Ala Leu Ala Gly Leu Leu Met Thr Leu	
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Pro His Phe Ile Ser Glu Pro Tyr Arg Tyr Asp Asn Thr Ser Pro Glu	
115 120 125	
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Asp Met Pro Gln Asp Phe Lys Ala Ser Leu Cys Leu Pro Thr Thr Ser	
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Ala Pro Ala Ser Ala Pro Ser Asn Gly Asn Cys Ser Ser Tyr Thr Glu	
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Val Asp Phe Ala His Asn Ser Asn Ser Pro Leu Tyr Leu Gly Ile Leu	
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Leu Met Leu Arg Leu Tyr Val Asp Ile Asn Gln Met Pro Glu Gly Gly	
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Ile Ser Leu Thr Ile Lys Asp Pro Arg Trp Val Gly Ala Trp Trp Leu	
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Gly Phe Leu Ile Ala Ala Gly Ala Val Ala Leu Ala Ala Ile Pro Tyr	
260 265 270	
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Phe Phe Phe Pro Lys Glu Met Pro Lys Glu Lys Arg Glu Leu Gln Phe	
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Arg Arg Lys Val Leu Ala Val Thr Asp Ser Pro Ala Arg Lys Gly Lys	
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gac tct ccc tct aag cag agc cct ggg gag tcc acg aag aag cag gat	1138
Asp Ser Pro Ser Lys Gln Ser Pro Gly Glu Ser Thr Lys Lys Gln Asp	
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Val Gly Ile Gln Phe Met Phe Leu Arg Ile Leu Ala Trp Met Pro Ser			
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Pro Val Ile His Gly Ser Ala Ile Asp Thr Thr Cys Val His Trp Ala			
595	600	605	
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Leu Ser Cys Gly Arg Arg Ala Val Cys Arg Tyr Tyr Asn Asn Asp Leu			
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ctc cga aac cgg ttc atc ggc ctc cag ttc ttc aaa aca ggt tct			2098
Leu Arg Asn Arg Phe Ile Gly Leu Gln Phe Phe Lys Thr Gly Ser			
625	630	635	640
gtg atc tgc ttc gcc tta gtt ttg gct gtc ctg agg cag cag gac aaa			2146
Val Ile Cys Phe Ala Leu Val Leu Ala Val Leu Arg Gln Gln Asp Lys			
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Glu Ala Arg Thr Lys Glu Ser Arg Ser Pro Ala Val Glu Gln Gln			
660	665	670	
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Leu Leu Val Ser Gly Pro Gly Lys Lys Pro Glu Asp Ser Arg Val			
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Ser Ser Ile Ser Thr Val Glu Lys Arg Phe Gly Leu Ser Ser Gln Thr
50 55 60

Ser Gly Leu Leu Ala Ser Phe Asn Glu Val Gly Asn Thr Ala Leu Ile
65 70 75 80

Val Phe Val Ser Tyr Phe Gly Ser Arg Val His Arg Pro Arg Met Ile
85 90 95

Gly Tyr Gly Ala Ile Leu Val Ala Leu Ala Gly Leu Leu Met Thr Leu
100 105 110

Pro His Phe Ile Ser Glu Pro Tyr Arg Tyr Asp Asn Thr Ser Pro Glu
115 120 125

Asp Met Pro Gln Asp Phe Lys Ala Ser Leu Cys Leu Pro Thr Thr Ser
130 135 140

Ala Pro Ala Ser Ala Pro Ser Asn Gly Asn Cys Ser Ser Tyr Thr Glu
145 150 155 160

Thr Gln His Leu Ser Val Val Gly Ile Met Phe Val Ala Gln Thr Leu
165 170 175

Leu Gly Val Gly Val Pro Ile Gln Pro Phe Gly Ile Ser Tyr Ile
180 185 190

Val Asp Phe Ala His Asn Ser Asn Ser Pro Leu Tyr Leu Gly Ile Leu
195 200 205

Phe Ala Val Thr Met Met Gly Pro Gly Leu Ala Phe Gly Leu Gly Ser
210 215 220

Leu Met Leu Arg Leu Tyr Val Asp Ile Asn Gln Met Pro Glu Gly Gly
225 230 235 240

Ile Ser Leu Thr Ile Lys Asp Pro Arg Trp Val Gly Ala Trp Trp Leu
245 250 255

Gly Phe Leu Ile Ala Ala Gly Ala Val Ala Leu Ala Ala Ile Pro Tyr
260 265 270

Phe Phe Phe Pro Lys Glu Met Pro Lys Glu Lys Arg Glu Leu Gln Phe
275 280 285

Arg Arg Lys Val Leu Ala Val Thr Asp Ser Pro Ala Arg Lys Gly Lys
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Ala Thr Phe Leu Pro Lys Phe Leu Glu Arg Gln Phe Ser Ile Thr Ala
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Ser Tyr Ala Asn Leu Leu Ile Gly Cys Leu Ser Phe Pro Ser Val Ile
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Val Gly Ile Val Val Gly Gly Val Leu Val Lys Arg Leu His Leu Gly
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Pro Val Gly Cys Gly Ala Leu Cys Leu Leu Gly Met Leu Leu Cys Leu
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Phe Tyr Thr Asn Cys Ser Cys Val Val Glu Gly Asn Pro Val Leu Ala
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Val Gly Ile Gln Phe Met Phe Leu Arg Ile Leu Ala Trp Met Pro Ser
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Pro Val Ile His Gly Ser Ala Ile Asp Thr Thr Cys Val His Trp Ala
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Arg Arg Lys Asp Ser Ser Leu Tyr Ile Gly Ile Leu Phe Thr Met Leu		
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Ile Tyr Val Asp Ala Val Phe Ile Asp Thr Ser Asn Leu Asp Ile Thr		
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Cys Gly Ala Leu Leu Phe Phe Ser Ser Leu Leu Met Phe Gly Phe Pro		
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Gln Ser Leu Pro Pro His Ser Asp Pro Ala Met Glu Ser Glu Gln Ala		
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gga tgt gaa agc att aat cta ggg ggc ata aac atc cct tat aca aca Gly Cys Glu Ser Ile Asn Leu Gly Gly Ile Asn Ile Pro Tyr Thr Thr 525 530 535 540	2236
gga cct tct ctc acc atg ccc cat agg aat ctg aca gga agc tgc aac	2284

Gly Pro Ser Leu Thr Met Pro His Arg Asn Leu Thr Gly Ser Cys Asn		
545	550	555
gtt aat tgt ggt tgt aaa ata cac gag tat gag cca gtc tgt gga tca	2332	
Val Asn Cys Gly Cys Lys Ile His Glu Tyr Glu Pro Val Cys Gly Ser		
560	565	570
gat gga att aca tac ttt aac cct tgt ctg gct ggc tgt gtt aat agt	2380	
Asp Gly Ile Thr Tyr Phe Asn Pro Cys Leu Ala Gly Cys Val Asn Ser		
575	580	585
ggt aat ctt agc act gkg ata cgg aat tat aca gaa tgc acc tgt gtc	2428	
Gly Asn Leu Ser Thr Xaa Ile Arg Asn Tyr Thr Glu Cys Thr Cys Val		
590	595	600
caa agt cgc caa gtg atc act cca ccc acc gtg gga cag cga agt cag	2476	
Gln Ser Arg Gln Val Ile Thr Pro Pro Thr Val Gly Gln Arg Ser Gln		
605	610	615
620		
ctc cgt gtg gtt att gtc aag act tat ctc aat gag aac ggc tat gct	2524	
Leu Arg Val Val Ile Val Lys Thr Tyr Leu Asn Glu Asn Gly Tyr Ala		
625	630	635
gtg tct ggg aaa tgt aaa cgg acc tgc aat act ctt atc cca ttc tta	2572	
Val Ser Gly Lys Cys Lys Arg Thr Cys Asn Thr Leu Ile Pro Phe Leu		
640	645	650
gtt ttt ctt ttc ata gtc acc ttc atc aca gca tgt gcc caa cca tca	2620	
Val Phe Leu Phe Ile Val Thr Phe Ile Thr Ala Cys Ala Gln Pro Ser		
655	660	665
gct atc ata gta aca ctc agg tcc gta gaa gat gag gag aga cct ttt	2668	
Ala Ile Ile Val Thr Leu Arg Ser Val Glu Asp Glu Glu Arg Pro Phe		
670	675	680
gca ctg gga atg cag ttt gtt ttg ttg cga aca ctt gca tac att cct	2716	
Ala Leu Gly Met Gln Phe Val Leu Leu Arg Thr Leu Ala Tyr Ile Pro		
685	690	695
700		
act cca atc tac ttt gga gca gtc att gac acc acc tgc atg ctc tgg	2764	
Thr Pro Ile Tyr Phe Gly Ala Val Ile Asp Thr Thr Cys Met Leu Trp		
705	710	715
caa cag gaa tgt ggt gtg cag ggt tct tgc tgg gag tac aac gtg acg	2812	
Gln Gln Glu Cys Gly Val Gln Gly Ser Cys Trp Glu Tyr Asn Val Thr		
720	725	730
735		
tcg ttt cgt ttt gtg tat ttt ggt ttg gct gcc ggc ctc aaa ttc gtt	2860	
Ser Phe Arg Phe Val Tyr Phe Gly Leu Ala Ala Gly Leu Lys Phe Val		
740	745	
ggg ttt att ttt att ttt ctg gcc tgg tac tcc ata aaa tac aag gag	2908	
Gly Phe Ile Phe Ile Phe Leu Ala Trp Tyr Ser Ile Lys Tyr Lys Glu		
750	755	760
gat gga ctg cag agg cgg agg cag aga gaa ttt ccc ctg agc acc gtg	2956	
Asp Gly Leu Gln Arg Arg Gln Arg Glu Phe Pro Leu Ser Thr Val		

765	770	775	780	
agt gag aga gtg gga cac ccc gac aat gcc cgg act aga tct tgc cca				3004
Ser Glu Arg Val Gly His Pro Asp Asn Ala Arg Thr Arg Ser Cys Pro				
785	790	795		
gct ttc agc acc cag gga gaa ttc cac gaa gag act ggc ctg caa aaa				3052
Ala Phe Ser Thr Gln Gly Glu Phe His Glu Glu Thr Gly Leu Gln Lys				
800	805	810		
ggg atc cag tgc gca gca cag acc tac ccg ggg ccc ttc cca gaa gca				3100
Gly Ile Gln Cys Ala Ala Gln Thr Tyr Pro Gly Pro Phe Pro Glu Ala				
815	820	825		
ata agt tcc tct gcg gac ccg ggg ctg gaa gag agc ccc gct gcc ttg				3148
Ile Ser Ser Ala Asp Pro Gly Leu Glu Ser Pro Ala Ala Leu				
830	835	840		
gag ccg ccc tcc tgaagcttga aatggaga attagttt gttggttgaa				3200
Glu Pro Pro Ser				
845				
ttgaaaatgg cgacttgaga aacaactgtg cttcttttc ttctttctt ttttttaacc				3260
tctacagaca caatcctcaa accaacaaaa ctcagtatac acagccgcta ttcatggagg				3320
gctggatacc tcaacaagac tgagagcctt tccccgcttc tctccaagaa ggagacgttc				3380
agcttagattt gttcccattt ccgttgtgtt aattcaaagc tcatgctccc ctacggtaca				3440
ggctgaggtt cacggtagc aaaaccatgg gaagggaaat ggccgtgcat atcattaact				3500
aacactccaa acaaaggta gcttgccag gacttggcat ttccaaatca aagtttttag				3560
atatgaacac ctactgtgag ttctgctaca aagcacaaat gaatttgtct caactatgca				3620
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atgtttctga aa				3692

<210> 8
 <211> 848
 <212> PRT
 <213> Homo sapiens

<220>
 <221> misc_feature
 <222> (33)..(33)
 <223> The 'Xaa' at location 33 stands for Leu, or Phe.

<220>
 <221> misc_feature
 <222> (594)..(594)
 <223> The 'Xaa' at location 594 stands for Gly, or Val.

<400> 8

Met	Asp	Glu	Gly	Thr	Gly	Leu	Gln	Pro	Gly	Ala	Gly	Glu	Gln	Leu	Glu
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Ala	Pro	Ala	Thr	Ala	Glu	Ala	Val	Gln	Glu	Arg	Cys	Glu	Pro	Glu	Thr
															30
Xaa	Arg	Ser	Lys	Ser	Leu	Pro	Val	Leu	Ser	Ser	Ala	Ser	Cys	Arg	Pro
															45
Ser	Leu	Ser	Pro	Thr	Ser	Gly	Asp	Ala	Asn	Pro	Ala	Phe	Gly	Cys	Val
															60
Asp	Ser	Ser	Gly	His	Gln	Glu	Leu	Lys	Gln	Gly	Pro	Asn	Pro	Leu	Ala
65															80
Pro	Ser	Pro	Ser	Ala	Pro	Ser	Thr	Ser	Ala	Gly	Leu	Gly	Asp	Cys	Asn
															95
His	Arg	Val	Asp	Leu	Ser	Lys	Thr	Phe	Ser	Val	Ser	Ser	Ala	Leu	Ala
															110
Met	Leu	Gln	Glu	Arg	Arg	Cys	Leu	Tyr	Val	Val	Leu	Thr	Asp	Ser	Arg
															125
Cys	Phe	Leu	Val	Cys	Met	Cys	Phe	Leu	Thr	Phe	Ile	Gln	Ala	Leu	Met
															140
Val	Ser	Gly	Tyr	Leu	Ser	Ser	Val	Ile	Thr	Thr	Ile	Glu	Arg	Arg	Tyr
145															160
Ser	Leu	Lys	Ser	Ser	Glu	Ser	Gly	Leu	Leu	Val	Ser	Cys	Phe	Asp	Ile
															175
Gly	Asn	Leu	Val	Val	Val	Phe	Val	Ser	Tyr	Phe	Gly	Gly	Arg	Gly	
															190
Arg	Arg	Pro	Leu	Trp	Leu	Ala	Val	Gly	Gly	Leu	Leu	Ile	Ala	Phe	Gly
															205
Ala	Ala	Leu	Phe	Ala	Leu	Pro	His	Phe	Ile	Ser	Pro	Pro	Tyr	Gln	Ile
															220
210															

Gln Glu Leu Asn Ala Ser Ala Pro Asn Asp Gly Leu Cys Gln Gly Gly
225 230 235 240

Asn Ser Thr Ala Thr Leu Glu Pro Pro Ala Cys Pro Lys Asp Ser Gly
245 250 255

Gly Asn Asn His Trp Val Tyr Leu Ala Leu Phe Ile Cys Ala Gln Ile
260 265 270

Leu Ile Gly Met Gly Ser Thr Pro Ile Tyr Thr Leu Gly Pro Thr Tyr
275 280 285

Leu Asp Asp Asn Val Lys Lys Glu Asn Ser Ser Leu Tyr Leu Ala Ile
290 295 300

Met Tyr Val Met Gly Ala Leu Gly Pro Ala Val Gly Tyr Leu Leu Gly
305 310 315 320

Gly Leu Leu Ile Gly Phe Tyr Val Asp Pro Arg Asn Pro Val His Leu
325 330 335

Asp Gln Asn Asp Pro Arg Phe Ile Gly Asn Trp Trp Ser Gly Phe Leu
340 345 350

Leu Cys Ala Ile Ala Met Phe Leu Val Ile Phe Pro Met Phe Thr Phe
355 360 365

Pro Lys Lys Leu Pro Pro Arg His Lys Lys Lys Lys Lys Lys Phe
370 375 380

Ser Val Asp Ala Val Ser Asp Asp Asp Val Leu Lys Glu Lys Ser Asn
385 390 395 400

Asn Ser Glu Gln Ala Asp Lys Lys Val Ser Ser Met Gly Phe Gly Lys
405 410 415

Asp Val Arg Asp Leu Pro Arg Ala Ala Val Arg Ile Leu Ser Asn Met
420 425 430

Thr Phe Leu Phe Val Ser Leu Ser Tyr Thr Ala Glu Ser Ala Ile Val
435 440 445

Thr Ala Phe Ile Thr Phe Ile Pro Lys Phe Ile Glu Ser Gln Phe Gly

450 455 460

Ile Pro Ala Ser Asn Ala Ser Ile Tyr Thr Gly Val Ile Ile Val Pro
465 470 475 480

Ser Ala Gly Val Gly Ile Val Leu Gly Gly Tyr Ile Ile Lys Lys Leu
485 490 495

Lys Leu Gly Ala Arg Glu Ser Ala Lys Leu Ala Met Ile Cys Ser Gly
500 505 510

Val Ser Leu Leu Cys Phe Ser Thr Leu Phe Ile Val Gly Cys Glu Ser
515 520 525

Ile Asn Leu Gly Gly Ile Asn Ile Pro Tyr Thr Thr Gly Pro Ser Leu
530 535 540

Thr Met Pro His Arg Asn Leu Thr Gly Ser Cys Asn Val Asn Cys Gly
545 550 555 560

Cys Lys Ile His Glu Tyr Glu Pro Val Cys Gly Ser Asp Gly Ile Thr
565 570 575

Tyr Phe Asn Pro Cys Leu Ala Gly Cys Val Asn Ser Gly Asn Leu Ser
580 585 590

Thr Xaa Ile Arg Asn Tyr Thr Glu Cys Thr Cys Val Gln Ser Arg Gln
595 600 605

Val Ile Thr Pro Pro Thr Val Gly Gln Arg Ser Gln Leu Arg Val Val
610 615 620

Ile Val Lys Thr Tyr Leu Asn Glu Asn Gly Tyr Ala Val Ser Gly Lys
625 630 635 640

Cys Lys Arg Thr Cys Asn Thr Leu Ile Pro Phe Leu Val Phe Leu Phe
645 650 655

Ile Val Thr Phe Ile Thr Ala Cys Ala Gln Pro Ser Ala Ile Ile Val
660 665 670

Thr Leu Arg Ser Val Glu Asp Glu Glu Arg Pro Phe Ala Leu Gly Met
675 680 685

Gln Phe Val Leu Leu Arg Thr Leu Ala Tyr Ile Pro Thr Pro Ile Tyr
690 695 700

Phe Gly Ala Val Ile Asp Thr Thr Cys Met Leu Trp Gln Gln Glu Cys
705 710 715 720

Gly Val Gln Gly Ser Cys Trp Glu Tyr Asn Val Thr Ser Phe Arg Phe
725 730 735

Val Tyr Phe Gly Leu Ala Ala Gly Leu Lys Phe Val Gly Phe Ile Phe
740 745 750

Ile Phe Leu Ala Trp Tyr Ser Ile Lys Tyr Lys Glu Asp Gly Leu Gln
755 760 765

Arg Arg Arg Gln Arg Glu Phe Pro Leu Ser Thr Val Ser Glu Arg Val
770 775 780

Gly His Pro Asp Asn Ala Arg Thr Arg Ser Cys Pro Ala Phe Ser Thr
785 790 795 800

Gln Gly Glu Phe His Glu Glu Thr Gly Leu Gln Lys Gly Ile Gln Cys
805 810 815

Ala Ala Gln Thr Tyr Pro Gly Pro Phe Pro Glu Ala Ile Ser Ser Ser
820 825 830

Ala Asp Pro Gly Leu Glu Glu Ser Pro Ala Ala Leu Glu Pro Pro Ser
835 840 845

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<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (370)..(2505)

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cagtggcctt gccagcgtgg ccaattctct gctgactgcc agaaaaaaaga ggccaggaag 120

aaagaggaaa	gagaagagat	cgctcagggg	tgagaccatg	cccttcatct	tttctttcc	180									
ctaatctcct	ctgcttgtgt	ccacccacac	tctcccccacc	tggaaaatt	gttaaaatt	240									
gctgtggagt	ttacctcagt	ttcctcttcc	agtctgtggt	gtgtggtcca	tcctcttgct	300									
gagcacattg	aaaggaactg	gctatcttg	atctcttcct	ccagatcaga	gtcaaggaat	360									
gtgtttata	atg gac act	tca tcc	aaa gaa aat	atc cag	ttg ttc	tgc aaa	411								
Met	Asp	Thr	Ser	Ser	Lys	Glu	Asn	Ile	Gln	Leu	Phe	Cys	Lys		
1	5							10							
act tca	gtg caa	cct gtt	gga agg	cct tct	ttt aaa	aca gaa	tat ccc	459							
Thr	Ser	Val	Gln	Pro	Val	Gly	Arg	Pro	Ser	Phe	Lys	Thr	Glu	Tyr	Pro
15		20				25					30				
tcc tca	gaa gaa	aag caa	cca tgc	tgt ggt	gaa cta	aag gtg	ttc ttg	507							
Ser	Ser	Glu	Glu	Lys	Gln	Pro	Cys	Cys	Gly	Glu	Leu	Lys	Val	Phe	Leu
	35			40				45							
tgt gcc	ttg tct	ttt gtt	tac ttt	gcc aaa	gca ttg	gca gaa	ggc tat	555							
Cys	Ala	Leu	Ser	Phe	Val	Tyr	Phe	Ala	Lys	Ala	Leu	Ala	Glu	Gly	Tyr
	50			55			60								
ctg aag	agc acc	atc act	cag ata	gag aga	agg ttt	gat atc	cct tct	603							
Leu	Lys	Ser	Thr	Ile	Thr	Gln	Ile	Glu	Arg	Arg	Phe	Asp	Ile	Pro	Ser
	65			70			75								
tca ctg	gtg gga	gtt att	gat ggt	agt ttt	gaa att	ggg aat	ctc tta	651							
Ser	Leu	Val	Gly	Val	Ile	Asp	Gly	Ser	Phe	Glu	Ile	Gly	Asn	Leu	Leu
	80			85			90								
gtt ata	aca ttt	gtt agc	tac ttt	gga gcc	aaa ctt	cac agg	cca aaa	699							
Val	Ile	Thr	Phe	Val	Ser	Tyr	Phe	Gly	Ala	Lys	Leu	His	Arg	Pro	Lys
	95			100			105				110				
ata att	gga gca	ggg tgt	gta atc	atg gga	gtt gga	aca ctg	ctc att	747							
Ile	Ile	Gly	Ala	Gly	Cys	Val	Ile	Met	Gly	Val	Gly	Thr	Leu	Leu	Ile
	115			120			125								
gca atg	cct cag	ttc ttc	atg gag	cag tac	aaa tat	gag aga	tat tct	795							
Ala	Met	Pro	Gln	Phe	Phe	Met	Glu	Gln	Tyr	Lys	Tyr	Glu	Arg	Tyr	Ser
	130			135			140								
cct tcc	tcc aat	tcc act	ctc agc	atc tct	ccg tgt	ctc cta	gag tca	843							
Pro	Ser	Ser	Asn	Ser	Thr	Leu	Ser	Ile	Ser	Pro	Cys	Leu	Leu	Glu	Ser
	145			150			155								
agc agt	caa tta	cca gtt	tca gtt	atg gaa	aaa tca	aaa tcc	aaa ata	891							
Ser	Ser	Gln	Leu	Pro	Val	Ser	Val	Met	Glu	Lys	Ser	Lys	Ser	Lys	Ile
	160			165			170								
agt aac	gaa tgt	gaa gtg	gac act	agc tct	tcc atg	tgg att	tat gtt	939							
Ser	Asn	Glu	Cys	Glu	Val	Asp	Thr	Ser	Ser	Met	Trp	Ile	Tyr	Val	
	175			180			185				190				
ttc ctg	ggc aat	ctt ctt	cgt gga	ata gga	gaa act	ccc att	cag cct	987							

Phe	Leu	Gly	Asn	Leu	Leu	Arg	Gly	Ile	Gly	Glu	Thr	Pro	Ile	Gln	Pro	
				195					200				205			
ttg	ggc	att	gcc	tac	ctg	gat	gat	ttt	gcc	agt	gaa	gac	aat	gca	gct	1035
Leu	Gly	Ile	Ala	Tyr	Leu	Asp	Asp	Phe	Ala	Ser	Glu	Asp	Asn	Ala	Ala	
				210				215			220					
ttc	tat	att	ggg	tgt	gtg	cag	acg	gtt	gca	att	ata	gga	cca	atc	ttt	1083
Phe	Tyr	Ile	Gly	Cys	Val	Gln	Thr	Val	Ala	Ile	Ile	Gly	Pro	Ile	Phe	
				225			230			235						
ggt	ttc	ctg	tta	ggc	tca	tta	tgt	gcc	aaa	cta	tat	gtt	gac	att	ggc	1131
Gly	Phe	Leu	Leu	Gly	Ser	Leu	Cys	Ala	Lys	Leu	Tyr	Val	Asp	Ile	Gly	
				240			245			250						
ttt	gta	aac	cta	gat	cac	ata	acc	att	acc	cca	aaa	gat	ccc	cag	tgg	1179
Phe	Val	Asn	Leu	Asp	His	Ile	Thr	Ile	Thr	Pro	Lys	Asp	Pro	Gln	Trp	
				255			260		265			270				
gta	gga	gcc	tgg	tgg	ctt	ggc	tat	cta	ata	gca	gga	atc	ata	agt	ctt	1227
Val	Gly	Ala	Trp	Trp	Leu	Gly	Tyr	Leu	Ile	Ala	Gly	Ile	Ile	Ser	Leu	
				275			280		285							
ctt	gca	gct	gtg	cct	ttc	tgg	tat	tta	cca	aag	agt	tta	cca	aga	tcc	1275
Leu	Ala	Ala	Val	Pro	Phe	Trp	Tyr	Leu	Pro	Lys	Ser	Leu	Pro	Arg	Ser	
				290			295		300							
caa	agt	aga	gag	gat	tct	aat	tct	tcc	tct	gag	aaa	tcc	aag	ttt	att	1323
Gln	Ser	Arg	Glu	Asp	Ser	Asn	Ser	Ser	Ser	Glu	Lys	Ser	Lys	Phe	Ile	
				305			310		315							
ata	gat	gat	cac	aca	gac	tac	caa	aca	ccc	cag	gga	gaa	aat	gca	aaa	1371
Ile	Asp	Asp	His	Thr	Asp	Tyr	Gln	Thr	Pro	Gln	Gly	Glu	Asn	Ala	Lys	
				320			325		330							
ata	atg	gaa	atg	gca	aga	gat	ttt	ctt	cca	tca	ctg	aag	aat	ctt	ttt	1419
Ile	Met	Glu	Met	Ala	Arg	Asp	Phe	Leu	Pro	Ser	Leu	Lys	Asn	Leu	Phe	
				335			340		345		350					
gga	aac	cca	gta	tac	ttc	cta	tat	tta	tgt	aca	agc	act	gtt	cag	ttc	1467
Gly	Asn	Pro	Val	Tyr	Phe	Leu	Tyr	Leu	Cys	Thr	Ser	Thr	Val	Gln	Phe	
				355			360		365							
aat	tct	ctg	ttc	ggc	atg	gtg	acg	tac	aaa	cca	aag	tac	att	gag	cag	1515
Asn	Ser	Leu	Phe	Gly	Met	Val	Thr	Tyr	Lys	Pro	Lys	Tyr	Ile	Glu	Gln	
				370			375		380							
cag	tat	gga	cag	tca	tcc	tcc	agg	gcc	aac	ttt	gtg	atc	ggg	ctc	atc	1563
Gln	Tyr	Gly	Gln	Ser	Ser	Arg	Ala	Asn	Phe	Val	Ile	Gly	Leu	Ile		
				385			390		395							
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Asn	Ile	Pro	Ala	Val	Ala	Leu	Gly	Ile	Phe	Ser	Gly	Gly	Ile	Val	Met	
				400			405		410							
aaa	aaa	ttc	aga	atc	agt	gtg	tgt	gga	gct	gca	aaa	ctc	tac	ttg	gga	1659
Lys	Lys	Phe	Arg	Ile	Ser	Val	Cys	Gly	Ala	Ala	Lys	Leu	Tyr	Leu	Gly	

415	420	425	430	
tca tct gtc ttt ggt tac ctc cta ttt ctt tcc ctg ttt gca ctg ggc Ser Ser Val Phe Gly Tyr Leu Leu Phe Leu Ser Leu Phe Ala Leu Gly 435 440 445				1707
tgt gaa aat tct gat gtg gca gga cta act gtc tcc tac caa gga acc Cys Glu Asn Ser Asp Val Ala Gly Leu Thr Val Ser Tyr Gln Gly Thr 450 455 460				1755
aaa cct gtc tct tat cat gaa cga gct ctc ttt tca gat tgc aac tca Lys Pro Val Ser Tyr His Glu Arg Ala Leu Phe Ser Asp Cys Asn Ser 465 470 475				1803
aga tgc aaa tgt tca gag aca aaa tgg gaa ccc atg tgc ggt gaa aat Arg Cys Lys Cys Ser Glu Thr Lys Trp Glu Pro Met Cys Gly Glu Asn 480 485 490				1851
gga atc aca tat gta tca gct tgt ctt gct ggt tgt caa acc tcc aac Gly Ile Thr Tyr Val Ser Ala Cys Leu Ala Gly Cys Gln Thr Ser Asn 495 500 505 510				1899
agg agt gga aaa aat att ata ttt tac aac tgc act tgt gtg gga att Arg Ser Gly Lys Asn Ile Ile Phe Tyr Asn Cys Thr Cys Val Gly Ile 515 520 525				1947
gca gct tct aaa tcc gga aat tcc tca ggc ata gtg gga aga tgt cag Ala Ala Ser Lys Ser Gly Asn Ser Ser Gly Ile Val Gly Arg Cys Gln 530 535 540				1995
aaa gac aat gga tgt ccc caa atg ttt ctg tat ttc ctt gta att tca Lys Asp Asn Gly Cys Pro Gln Met Phe Leu Tyr Phe Leu Val Ile Ser 545 550 555				2043
gtc atc aca tcc tat act tta tcc cta ggt ggc ata cct gga tac ata Val Ile Thr Ser Tyr Thr Leu Ser Leu Gly Gly Ile Pro Gly Tyr Ile 560 565 570				2091
tta ctt ctg agg tgc att aag cca cag ctt aag tct ttt gcc ttg ggt Leu Leu Leu Arg Cys Ile Lys Pro Gln Leu Lys Ser Phe Ala Leu Gly 575 580 585 590				2139
atc tac aca tta gca ata aga gtt ctt gca gga atc cca gct cca gtg Ile Tyr Thr Leu Ala Ile Arg Val Leu Ala Gly Ile Pro Ala Pro Val 595 600 605				2187
tat ttt gga gtt ttg att gat act tca tgc ctc aaa tgg gga ttt aaa Tyr Phe Gly Val Leu Ile Asp Thr Ser Cys Leu Lys Trp Gly Phe Lys 610 615 620				2235
aga tgt gga agt aga gga tca tgc aga tta tat gat tca aat gtc ttc Arg Cys Gly Ser Arg Gly Ser Cys Arg Leu Tyr Asp Ser Asn Val Phe 625 630 635				2283
aga cat ata tat ttg gga cta act gtg ata ctg ggc aca gtg tca att Arg His Ile Tyr Leu Gly Leu Thr Val Ile Leu Gly Thr Val Ser Ile 640 645 650				2331

ctc cta agc att gca gta ctt ttc att tta aag aaa aat tat gtt tca	2379
Leu Leu Ser Ile Ala Val Leu Phe Ile Leu Lys Lys Asn Tyr Val Ser	
655 660 665 670	
aaa cac aga agt ttt ata acc aag aga gaa aga aca atg gtg tct aca	2427
Lys His Arg Ser Phe Ile Thr Lys Arg Glu Arg Thr Met Val Ser Thr	
675 680 685	
aga ttc caa aag gaa aat tac act aca agt gat cat ctg cta caa ccc	2475
Arg Phe Gln Lys Glu Asn Tyr Thr Ser Asp His Leu Leu Gln Pro	
690 695 700	
aac tac tgg cca ggc aag gaa act caa ctt tagaaacatg atgactggaa	2525
Asn Tyr Trp Pro Gly Lys Glu Thr Gln Leu	
705 710	
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Glu	Glu	Lys	Gln	Pro	Cys	Cys	Gly	Glu	Leu	Lys	Val	Phe	Leu	Cys	Ala
35								40				45			
Leu	Ser	Phe	Val	Tyr	Phe	Ala	Lys	Ala	Leu	Ala	Glu	Gly	Tyr	Leu	Lys
50						55				60					
Ser	Thr	Ile	Thr	Gln	Ile	Glu	Arg	Arg	Phe	Asp	Ile	Pro	Ser	Ser	Leu
65						70			75			80			
Val	Gly	Val	Ile	Asp	Gly	Ser	Phe	Glu	Ile	Gly	Asn	Leu	Leu	Val	Ile
								85		90			95		
Thr	Phe	Val	Ser	Tyr	Phe	Gly	Ala	Lys	Leu	His	Arg	Pro	Lys	Ile	Ile
								100		105			110		
Gly	Ala	Gly	Cys	Val	Ile	Met	Gly	Val	Gly	Thr	Leu	Leu	Ile	Ala	Met
						115		120			125				
Pro	Gln	Phe	Phe	Met	Glu	Gln	Tyr	Lys	Tyr	Glu	Arg	Tyr	Ser	Pro	Ser
						130		135		140					
Ser	Asn	Ser	Thr	Leu	Ser	Ile	Ser	Pro	Cys	Leu	Leu	Glu	Ser	Ser	Ser
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Gln	Leu	Pro	Val	Ser	Val	Met	Glu	Lys	Ser	Lys	Ser	Lys	Ile	Ser	Asn
						165		170			175				
Glu	Cys	Glu	Val	Asp	Thr	Ser	Ser	Ser	Met	Trp	Ile	Tyr	Val	Phe	Leu
								180		185		190			
Gly	Asn	Leu	Leu	Arg	Gly	Ile	Gly	Glu	Thr	Pro	Ile	Gln	Pro	Leu	Gly
						195		200			205				
Ile	Ala	Tyr	Leu	Asp	Asp	Phe	Ala	Ser	Glu	Asp	Asn	Ala	Ala	Phe	Tyr
								210		215		220			
Ile	Gly	Cys	Val	Gln	Thr	Val	Ala	Ile	Ile	Gly	Pro	Ile	Phe	Gly	Phe
225								230		235			240		

Leu Leu Gly Ser Leu Cys Ala Lys Leu Tyr Val Asp Ile Gly Phe Val
245 250 255

Asn Leu Asp His Ile Thr Ile Thr Pro Lys Asp Pro Gln Trp Val Gly
260 265 270

Ala Trp Trp Leu Gly Tyr Leu Ile Ala Gly Ile Ile Ser Leu Leu Ala
275 280 285

Ala Val Pro Phe Trp Tyr Leu Pro Lys Ser Leu Pro Arg Ser Gln Ser
290 295 300

Arg Glu Asp Ser Asn Ser Ser Ser Glu Lys Ser Lys Phe Ile Ile Asp
305 310 315 320

Asp His Thr Asp Tyr Gln Thr Pro Gln Gly Glu Asn Ala Lys Ile Met
325 330 335

Glu Met Ala Arg Asp Phe Leu Pro Ser Leu Lys Asn Leu Phe Gly Asn
340 345 350

Pro Val Tyr Phe Leu Tyr Leu Cys Thr Ser Thr Val Gln Phe Asn Ser
355 360 365

Leu Phe Gly Met Val Thr Tyr Lys Pro Lys Tyr Ile Glu Gln Gln Tyr
370 375 380

Gly Gln Ser Ser Ser Arg Ala Asn Phe Val Ile Gly Leu Ile Asn Ile
385 390 395 400

Pro Ala Val Ala Leu Gly Ile Phe Ser Gly Gly Ile Val Met Lys Lys
405 410 415

Phe Arg Ile Ser Val Cys Gly Ala Ala Lys Leu Tyr Leu Gly Ser Ser
420 425 430

Val Phe Gly Tyr Leu Leu Phe Leu Ser Leu Phe Ala Leu Gly Cys Glu
435 440 445

Asn Ser Asp Val Ala Gly Leu Thr Val Ser Tyr Gln Gly Thr Lys Pro
450 455 460

Val Ser Tyr His Glu Arg Ala Leu Phe Ser Asp Cys Asn Ser Arg Cys
465 470 475 480

Lys Cys Ser Glu Thr Lys Trp Glu Pro Met Cys Gly Glu Asn Gly Ile
485 490 495

Thr Tyr Val Ser Ala Cys Leu Ala Gly Cys Gln Thr Ser Asn Arg Ser
500 505 510

Gly Lys Asn Ile Ile Phe Tyr Asn Cys Thr Cys Val Gly Ile Ala Ala
515 520 525

Ser Lys Ser Gly Asn Ser Ser Gly Ile Val Gly Arg Cys Gln Lys Asp
530 535 540

Asn Gly Cys Pro Gln Met Phe Leu Tyr Phe Leu Val Ile Ser Val Ile
545 550 555 560

Thr Ser Tyr Thr Leu Ser Leu Gly Gly Ile Pro Gly Tyr Ile Leu Leu
565 570 575

Leu Arg Cys Ile Lys Pro Gln Leu Lys Ser Phe Ala Leu Gly Ile Tyr
580 585 590

Thr Leu Ala Ile Arg Val Leu Ala Gly Ile Pro Ala Pro Val Tyr Phe
595 600 605

Gly Val Leu Ile Asp Thr Ser Cys Leu Lys Trp Gly Phe Lys Arg Cys
610 615 620

Gly Ser Arg Gly Ser Cys Arg Leu Tyr Asp Ser Asn Val Phe Arg His
625 630 635 640

Ile Tyr Leu Gly Leu Thr Val Ile Leu Gly Thr Val Ser Ile Leu Leu
645 650 655

Ser Ile Ala Val Leu Phe Ile Leu Lys Lys Asn Tyr Val Ser Lys His
660 665 670

Arg Ser Phe Ile Thr Lys Arg Glu Arg Thr Met Val Ser Thr Arg Phe
675 680 685

Gln Lys Glu Asn Tyr Thr Ser Asp His Leu Leu Gln Pro Asn Tyr

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695

700

Trp Pro Gly Lys Glu Thr Gln Leu
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 gaggtcacca ggccggaggcg cggag atg ccc ctg cat cag ctg ggg gac aag 172
 Met Pro Leu His Gln Leu Gly Asp Lys
 1 5
 ccg ctc acc ttc ccc agc ccc aac tca gcc atg gaa aac ggg ctt gac 220
 Pro Leu Thr Phe Pro Ser Pro Asn Ser Ala Met Glu Asn Gly Leu Asp
 10 15 20 25
 cac acc cca ccc agc agg agg gca tcc ccg ggc aca ccc ctg agc ccc 268
 His Thr Pro Pro Ser Arg Arg Ala Ser Pro Gly Thr Pro Leu Ser Pro
 30 35 40
 ggg tcc ctc cgc tcc gct gcc cat agc ccc ctg gac acc agc aag cag 316
 Gly Ser Leu Arg Ser Ala Ala His Ser Pro Leu Asp Thr Ser Lys Gln
 45 50 55
 ccc ctc tgc cag ctc tgg gcc gag aag cat ggc gcc ccg ggg acc cat 364
 Pro Leu Cys Gln Leu Trp Ala Glu Lys His Gly Ala Arg Gly Thr His
 60 65 70
 gag gtg cgg tac gtc tcg gcc ggg cag agc gtg gcg tgc ggc tgg tgg 412
 Glu Val Arg Tyr Val Ser Ala Gly Gln Ser Val Ala Cys Gly Trp Trp
 75 80 85
 gcc ttc gca ccg ccg tgc ctg cag gtc ctc aac acg ccc aag ggc atc 460
 Ala Phe Ala Pro Pro Cys Leu Gln Val Leu Asn Thr Pro Lys Gly Ile
 90 95 100 105
 ctg ttc ttc ctg tgt gcg gca ttc ctg cag ggg atg act gtg aat 508
 Leu Phe Phe Leu Cys Ala Ala Ala Phe Leu Gln Gly Met Thr Val Asn
 110 115 120
 ggc ttc atc aac aca gtc atc acc tcc ctg gag cgc cgc tat gac ctg 556
 Gly Phe Ile Asn Thr Val Ile Thr Ser Leu Glu Arg Arg Tyr Asp Leu
 125 130 135

cac agc tac cag agc ggg ctc atc gcc agc tcc tac gac att gcc gcc	604
His Ser Tyr Gln Ser Gly Leu Ile Ala Ser Ser Tyr Asp Ile Ala Ala	
140 145 150	
tgc ctc tgc ctc acc ttc gtc agc tac ttc ggg ggc tca ggg cac aag	652
Cys Leu Cys Leu Thr Phe Val Ser Tyr Phe Gly Gly Ser Gly His Lys	
155 160 165	
ccg cgc tgg ctg ggc tgg ggc gtg ctt atg ggc acg ggg tcg ctg	700
Pro Arg Trp Leu Gly Trp Gly Val Leu Leu Met Gly Thr Gly Ser Leu	
170 175 180 185	
gtg ttc gcg ctg ccc cac ttc acg gct ggc cgc tat gag gtg gag ttg	748
Val Phe Ala Leu Pro His Phe Thr Ala Gly Arg Tyr Glu Val Glu Leu	
190 195 200	
gac gcg ggt gtc agg acg tgc cct gcc aac ccc ggc gcg gtg tgt gcg	796
Asp Ala Gly Val Arg Thr Cys Pro Ala Asn Pro Gly Ala Val Cys Ala	
205 210 215	
gac agc acc tcg ggc ctg tcc cgc tac cag ctg gtc ttc atg ctg ggc	844
Asp Ser Thr Ser Gly Leu Ser Arg Tyr Gln Leu Val Phe Met Leu Gly	
220 225 230	
cag ttc ctg cat ggc gtg ggt gcc aca ccc ctc tac acg ctg ggc gtc	892
Gln Phe Leu His Gly Val Gly Ala Thr Pro Leu Tyr Thr Leu Gly Val	
235 240 245	
acc tac ctg gat gag aac gtc aag tcc agc tgc tcg ccc gtc tac att	940
Thr Tyr Leu Asp Glu Asn Val Lys Ser Ser Cys Ser Pro Val Tyr Ile	
250 255 260 265	
gcc atc ttc tac aca gcg gcc atc ctg ggc cca gct gcc ggc tac ctg	988
Ala Ile Phe Tyr Thr Ala Ala Ile Leu Gly Pro Ala Ala Gly Tyr Leu	
270 275 280	
att gga ggt gcc ctg ctg aat atc tac acg gaa atg ggc cga cgg acg	1036
Ile Gly Gly Ala Leu Leu Asn Ile Tyr Thr Glu Met Gly Arg Arg Thr	
285 290 295	
gag ctg acc acc gag agc cca ctg tgg gtc ggc gcc tgg tgg gtc ggc	1084
Glu Leu Thr Thr Glu Ser Pro Leu Trp Val Gly Ala Trp Trp Val Gly	
300 305 310	
ttc ctg ggc tct ggg gcc gct gct ttc ttc acc gcc gtt ccc atc ctt	1132
Phe Leu Gly Ser Gly Ala Ala Ala Phe Phe Thr Ala Val Pro Ile Leu	
315 320 325	
ggt tac cct cgg cag ctg cca ggc tcc cag cgc tac gcg gtc atg aga	1180
Gly Tyr Pro Arg Gln Leu Pro Gly Ser Gln Arg Tyr Ala Val Met Arg	
330 335 340 345	
gcg gcg gaa atg cac cag ttg aag gac agc agc cgt ggg gag gcg agc	1228
Ala Ala Glu Met His Gln Leu Lys Asp Ser Ser Arg Gly Glu Ala Ser	
350 355 360	

aac ccg gac ttt ggg aaa acc atc aga gac ctg cct ctc tcc atc tgg Asn Pro Asp Phe Gly Lys Thr Ile Arg Asp Leu Pro Leu Ser Ile Trp 365 370 375	1276
ctc ctg ctg aag aac ccc acg ttc atc ctg ctc tgc ctg gcc ggg gcc Leu Leu Leu Lys Asn Pro Thr Phe Ile Leu Leu Cys Leu Ala Gly Ala 380 385 390	1324
acc gag gcc act ctc atc acc ggc atg tcc acg ttc agc ccc aag ttc Thr Glu Ala Thr Leu Ile Thr Gly Met Ser Thr Phe Ser Pro Lys Phe 395 400 405	1372
ttg gag tcc cag ttc agc ctg agt gcc tca gaa gct gcc acc ttg ttt Leu Glu Ser Gln Phe Ser Leu Ser Ala Ser Glu Ala Ala Thr Leu Phe 410 415 420 425	1420
ggg tac ctg gtg cca gcg ggt ggt ggc acc ttc ctg ggc ggc Gly Tyr Leu Val Val Pro Ala Gly Gly Gly Thr Phe Leu Gly Gly 430 435 440	1468
ttc ttt gtg aac aag ctc agg ctc cgg ggc tcc gcg gtc atc aag ttc Phe Phe Val Asn Lys Leu Arg Leu Arg Gly Ser Ala Val Ile Lys Phe 445 450 455	1516
tgc ctg ttc tgc acc gtt gtc agc ctg ctg ggc atc ctc gtc ttc tca Cys Leu Phe Cys Thr Val Val Ser Leu Leu Gly Ile Leu Val Phe Ser 460 465 470	1564
ctg cac tgc ccc agt gtg ccc atg gcg ggc gtc aca gcc agc tac ggc Leu His Cys Pro Ser Val Pro Met Ala Gly Val Thr Ala Ser Tyr Gly 475 480 485	1612
ggg agc ctc ctg ccc gaa ggc cac ctg aac cta acg gct ccc tgc aac Gly Ser Leu Leu Pro Glu Gly His Leu Asn Leu Thr Ala Pro Cys Asn 490 495 500 505	1660
gct gcc tgc agc tgc cag cca gaa cac tac agc cct gtg tgc ggc tgc Ala Ala Cys Ser Cys Gln Pro Glu His Tyr Ser Pro Val Cys Gly Ser 510 515 520	1708
gac ggc ctc atg tac ttc tca ctg tgc cac gca ggg tgc cct gca gcc Asp Gly Leu Met Tyr Phe Ser Leu Cys His Ala Gly Cys Pro Ala Ala 525 530 535	1756
acg gag acg aat gtg gac ggc cag aag gtg tac cga gac tgt agc tgt Thr Glu Thr Asn Val Asp Gly Gln Lys Val Tyr Arg Asp Cys Ser Cys 540 545 550	1804
atc cct cag aat ctt tcc tct ggt ttt ggc cat gcc act gca ggg aaa Ile Pro Gln Asn Leu Ser Ser Gly Phe Gly His Ala Thr Ala Gly Lys 555 560 565	1852
tgc act tca act tgt cag aga aag ccc ctc ctt ctg gtt ttc ata ttc Cys Thr Ser Thr Cys Gln Arg Lys Pro Leu Leu Val Phe Ile Phe 570 575 580 585	1900
gtt gta att ttc ttt aca ttc ctc agc agc att cct gca cta acg gca	1948

Val Val Ile Phe Phe Thr Phe Leu Ser Ser Ile Pro Ala Leu Thr Ala			
590	595	600	
act cta cga tgt gtc cgt gac cct cag aga tcc ttt gcc ctg gga atc		1996	
Thr Leu Arg Cys Val Arg Asp Pro Gln Arg Ser Phe Ala Leu Gly Ile			
605	610	615	
cag tgg att gta gtt aga ata cta ggg ggc atc ccg ggg ccc atc gcc		2044	
Gln Trp Ile Val Val Arg Ile Leu Gly Gly Ile Pro Gly Pro Ile Ala			
620	625	630	
ttc ggc tgg gtg atc gac aag gcc tgt ctg ctg tgg cag gac cag tgt		2092	
Phe Gly Trp Val Ile Asp Lys Ala Cys Leu Leu Trp Gln Asp Gln Cys			
635	640	645	
ggc cag cag ggc tcc tgc ttg gtg tac cag aat tcg gcc atg agc cgc		2140	
Gly Gln Gln Gly Ser Cys Leu Val Tyr Gln Asn Ser Ala Met Ser Arg			
650	655	660	665
tac ata ctc atc atg ggg ctc ctg tac aag gtg ctg ggc gtc ctc ttc		2188	
Tyr Ile Leu Ile Met Gly Leu Leu Tyr Lys Val Leu Gly Val Leu Phe			
670	675	680	
ttt gcc ata gcc tgc ttc tta tac aag ccc ctg tcg gag tct tca gat		2236	
Phe Ala Ile Ala Cys Phe Leu Tyr Lys Pro Leu Ser Glu Ser Ser Asp			
685	690	695	
ggc ctg gaa act tgt ctg ccc agc cag tcc tca gcc cct gac agt gcc		2284	
Gly Leu Glu Thr Cys Leu Pro Ser Gln Ser Ser Ala Pro Asp Ser Ala			
700	705	710	
aca gat agc cag ctc cag agc agc gtc tgaccaccgc ccgcgcacac		2331	
Thr Asp Ser Gln Leu Gln Ser Ser Val			
715	720		
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cggcgggcct gcagccccgag gaaggcttgt gtgtccctcag ttaaaaactgt gcatatcgaa		2691	
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<400> 12

Met Pro Leu His Gln Leu Gly Asp Lys Pro Leu Thr Phe Pro Ser Pro
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Ala Ser Pro Gly Thr Pro Leu Ser Pro Gly Ser Leu Arg Ser Ala Ala
35 40 45

His Ser Pro Leu Asp Thr Ser Lys Gln Pro Leu Cys Gln Leu Trp Ala
50 55 60

Glu Lys His Gly Ala Arg Gly Thr His Glu Val Arg Tyr Val Ser Ala
65 70 75 80

Gly Gln Ser Val Ala Cys Gly Trp Trp Ala Phe Ala Pro Pro Cys Leu
85 90 95

Gln Val Leu Asn Thr Pro Lys Gly Ile Leu Phe Phe Leu Cys Ala Ala
100 105 110

Ala Phe Leu Gln Gly Met Thr Val Asn Gly Phe Ile Asn Thr Val Ile
115 120 125

Thr Ser Leu Glu Arg Arg Tyr Asp Leu His Ser Tyr Gln Ser Gly Leu
130 135 140

Ile Ala Ser Ser Tyr Asp Ile Ala Ala Cys Leu Cys Leu Thr Phe Val
145 150 155 160

Ser Tyr Phe Gly Gly Ser Gly His Lys Pro Arg Trp Leu Gly Trp Gly
165 170 175

Val Leu Leu Met Gly Thr Gly Ser Leu Val Phe Ala Leu Pro His Phe
180 185 190

Thr Ala Gly Arg Tyr Glu Val Glu Leu Asp Ala Gly Val Arg Thr Cys
195 200 205

Pro Ala Asn Pro Gly Ala Val Cys Ala Asp Ser Thr Ser Gly Leu Ser
210 215 220

Arg Tyr Gln Leu Val Phe Met Leu Gly Gln Phe Leu His Gly Val Gly
225 230 235 240

Ala Thr Pro Leu Tyr Thr Leu Gly Val Thr Tyr Leu Asp Glu Asn Val
245 250 255

Lys Ser Ser Cys Ser Pro Val Tyr Ile Ala Ile Phe Tyr Thr Ala Ala
260 265 270

Ile Leu Gly Pro Ala Ala Gly Tyr Leu Ile Gly Gly Ala Leu Leu Asn
275 280 285

Ile Tyr Thr Glu Met Gly Arg Arg Thr Glu Leu Thr Thr Glu Ser Pro
290 295 300

Leu Trp Val Gly Ala Trp Trp Val Gly Phe Leu Gly Ser Gly Ala Ala
305 310 315 320

Ala Phe Phe Thr Ala Val Pro Ile Leu Gly Tyr Pro Arg Gln Leu Pro
325 330 335

Gly Ser Gln Arg Tyr Ala Val Met Arg Ala Ala Glu Met His Gln Leu
340 345 350

Lys Asp Ser Ser Arg Gly Glu Ala Ser Asn Pro Asp Phe Gly Lys Thr
355 360 365

Ile Arg Asp Leu Pro Leu Ser Ile Trp Leu Leu Leu Lys Asn Pro Thr
370 375 380

Phe Ile Leu Leu Cys Leu Ala Gly Ala Thr Glu Ala Thr Leu Ile Thr
385 390 395 400

Gly Met Ser Thr Phe Ser Pro Lys Phe Leu Glu Ser Gln Phe Ser Leu
405 410 415

Ser Ala Ser Glu Ala Ala Thr Leu Phe Gly Tyr Leu Val Val Pro Ala
420 425 430

Gly Gly Gly Thr Phe Leu Gly Gly Phe Phe Val Asn Lys Leu Arg
435 440 445

Leu Arg Gly Ser Ala Val Ile Lys Phe Cys Leu Phe Cys Thr Val Val
450 455 460

Ser Leu Leu Gly Ile Leu Val Phe Ser Leu His Cys Pro Ser Val Pro
465 470 475 480

Met Ala Gly Val Thr Ala Ser Tyr Gly Gly Ser Leu Leu Pro Glu Gly
485 490 495

His Leu Asn Leu Thr Ala Pro Cys Asn Ala Ala Cys Ser Cys Gln Pro
500 505 510

Glu His Tyr Ser Pro Val Cys Gly Ser Asp Gly Leu Met Tyr Phe Ser
515 520 525

Leu Cys His Ala Gly Cys Pro Ala Ala Thr Glu Thr Asn Val Asp Gly
530 535 540

Gln Lys Val Tyr Arg Asp Cys Ser Cys Ile Pro Gln Asn Leu Ser Ser
545 550 555 560

Gly Phe Gly His Ala Thr Ala Gly Lys Cys Thr Ser Thr Cys Gln Arg
565 570 575

Lys Pro Leu Leu Leu Val Phe Ile Phe Val Val Ile Phe Phe Thr Phe
580 585 590

Leu Ser Ser Ile Pro Ala Leu Thr Ala Thr Leu Arg Cys Val Arg Asp
595 600 605

Pro Gln Arg Ser Phe Ala Leu Gly Ile Gln Trp Ile Val Val Arg Ile
610 615 620

Leu Gly Gly Ile Pro Gly Pro Ile Ala Phe Gly Trp Val Ile Asp Lys
625 630 635 640

Ala Cys Leu Leu Trp Gln Asp Gln Cys Gly Gln Gln Gly Ser Cys Leu
645 650 655

Val Tyr Gln Asn Ser Ala Met Ser Arg Tyr Ile Leu Ile Met Gly Leu
660 665 670

Leu Tyr Lys Val Leu Gly Val Leu Phe Phe Ala Ile Ala Cys Phe Leu

675

680

685

Tyr Lys Pro Leu Ser Glu Ser Ser Asp Gly Leu Glu Thr Cys Leu Pro
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Ser Gln Ser Ser Ala Pro Asp Ser Ala Thr Asp Ser Gln Leu Gln Ser
705 710 715 720

Ser Val

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<210> 14
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<400> 14
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19

<210> 15
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<210> 16
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gctacaaccc aactactggc	20		
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Lys	Ser	Leu	Ser	Gly	Thr	Tyr	Met	Asn	Ser	Met	Leu	Thr	Gln	Ile	Glu
35					40						45				
Arg	Gln	Phe	Gly	Ile	Pro	Thr	Ser	Ile	Val	Gly	Leu	Ile	Asn	Gly	Ser
50					55				60						
Phe	Glu	Ile	Gly	Asn	Leu	Leu	Ile	Ile	Phe	Val	Ser	Tyr	Phe	Gly	
65					70			75			80				
Thr	Lys	Leu	His	Arg	Pro	Ile	Met	Ile	Gly	Val	Gly	Cys	Ala	Val	Met
							85		90			95			
Gly	Leu	Gly	Cys	Phe	Leu	Ile	Ser	Leu	Pro	His	Phe	Leu	Met	Gly	Gln
							100	105			110				
Tyr	Glu	Tyr	Glu	Thr	Ile	Leu	Pro	Thr	Ser	Asn	Val	Ser	Ser	Asn	Ser
						115	120			125					
Phe	Phe	Cys	Val	Glu	Asn	Arg	Ser	Gln	Thr	Leu	Asn	Pro	Thr	Gln	Asp
						130	135			140					
Pro	Ser	Glu	Cys	Val	Lys	Glu	Met	Lys	Ser	Leu	Met	Trp	Ile	Tyr	Val
						145	150			155		160			
Leu	Val	Gly	Asn	Ile	Ile	Arg	Gly	Ile	Gly	Glu	Thr	Pro	Ile	Met	Pro
						165		170			175				
Leu	Gly	Ile	Ser	Tyr	Ile	Glu	Asp	Phe	Ala	Lys	Ser	Glu	Asn	Ser	Pro
						180	185			190					
Leu	Tyr	Ile	Gly	Ile	Leu	Glu	Thr	Gly	Met	Thr	Ile	Gly	Pro	Leu	Ile
						195	200			205					
Gly	Leu	Leu	Leu	Ala	Ser	Ser	Cys	Ala	Asn	Ile	Tyr	Val	Asp	Ile	Glu
						210	215			220					
Ser	Val	Asn	Thr	Asp	Asp	Leu	Thr	Ile	Thr	Pro	Thr	Asp	Thr	Arg	Trp
						225	230			235		240			

Val Gly Ala Trp Trp Ile Gly Phe Leu Val Cys Ala Gly Val Asn Ile
245 250 255

Leu Thr Ser Phe Pro Phe Phe Phe Pro Lys Thr Leu Pro Lys Glu
260 265 270

Gly Leu Gln Glu Asn Val Asp Gly Thr Glu Asn Ala Lys Glu Lys Lys
275 280 285

His Arg Lys Lys Ala Lys Glu Glu Lys Arg Gly Ile Thr Lys Asp Phe
290 295 300

Phe Val Phe Met Lys Ser Leu Ser Cys Asn Pro Ile Tyr Met Leu Phe
305 310 315 320

Ile Leu Ile Ser Val Leu Gln Phe Asn Ala Phe Ile Asn Ser Phe Thr
325 330 335

Phe Met Pro Lys Tyr Leu Glu Gln Gln Tyr Gly Lys Ser Thr Ala Glu
340 345 350

Val Val Phe Leu Met Gly Leu Tyr Met Leu Pro Pro Ile Cys Leu Gly
355 360 365

Tyr Leu Ile Gly Gly Leu Ile Met Lys Lys Phe Lys Val Thr Val Lys
370 375 380

Lys Ala Ala His Leu Ala Phe Trp Leu Cys Leu Ser Glu Tyr Leu Leu
385 390 395 400

Ser Phe Leu Ser Tyr Val Met Thr Cys Asp Asn Phe Pro Val Ala Gly
405 410 415

Leu Thr Thr Ser Tyr Glu Gly Val Gln His Gln Leu Tyr Val Glu Asn
420 425 430

Lys Val Leu Ala Asp Cys Asn Thr Arg Cys Asn Cys Ser Thr Asn Thr
435 440 445

Trp Asp Pro Val Cys Gly Asp Asn Gly Leu Ala Tyr Met Ser Ala Cys
450 455 460

Leu Ala Gly Cys Glu Lys Ser Val Gly Thr Gly Thr Asn Met Val Phe
465 470 475 480

Gln Asn Cys Ser Cys Ile Gln Ser Ser Gly Asn Ser Ser Ala Val Leu
485 490 495

Gly Leu Cys Asn Lys Gly Pro Asp Cys Ala Asn Lys Leu Gln Tyr Phe
500 505 510

Leu Ile Ile Ala Ile Phe Gly Cys Phe Ile Tyr Ser Leu Ala Gly Ile
515 520 525

Pro Gly Tyr Met Val Leu Leu Arg Cys Ile Lys Ser Glu Glu Lys Ser
530 535 540

Leu Gly Val Gly Leu His Ala Phe Cys Ile Arg Ile Leu Ala Gly Ile
545 550 555 560

Pro Ala Pro Ile Tyr Phe Gly Ala Leu Ile Asp Arg Thr Cys Leu His
565 570 575

Trp Gly Thr Leu Lys Cys Gly Glu Pro Gly Ala Cys Arg Met Tyr Asp
580 585 590

Ile Asn Ser Phe Arg Arg Leu Tyr Leu Gly Leu Pro Ala Ala Leu Arg
595 600 605

Gly Ala Ser Phe Val Pro Ala Phe Phe Ile Leu Arg Leu Thr Arg Thr
610 615 620

Phe Gln Phe Pro Gly Asp Ile Glu Ser Ser Lys Thr Asp His Ala Glu
625 630 635 640

Met Lys Leu Thr Leu Lys Glu Ser Glu Cys Thr Glu Val Leu Arg Ser
645 650 655

Lys Val Thr Glu Asp
660

<210> 24
<211> 670
<212> PRT
<213> Rattus rattus

<400> 24

Met Gly Glu Thr Glu Lys Arg Val Ala Thr His Glu Val Arg Cys Phe
1 5 10 15

Ser Lys Ile Lys Met Phe Leu Leu Ala Leu Thr Trp Ala Tyr Val Ser
20 25 30

Gln Ser Leu Ser Gly Ile Tyr Met Asn Thr Met Leu Thr Gln Ile Glu
35 40 45

Arg Gln Phe Asp Ile Pro Ile Ser Ile Val Gly Phe Ile Asn Gly Ser
50 55 60

Phe Glu Ile Gly Asn Phe Leu Leu Ile Ile Phe Val Ser Tyr Phe Gly
65 70 75 80

Thr Lys Leu His Arg Pro Ile Met Ile Gly Val Gly Cys Val Ile Met
85 90 95

Gly Leu Gly Cys Phe Leu Met Ser Leu Pro His Phe Leu Met Gly Arg
100 105 110

Tyr Glu Tyr Glu Thr Thr Ile Ser Pro Thr Ser Asn Leu Ser Ser Asn
115 120 125

Ser Phe Leu Cys Met Glu Asn Arg Ser Gln Thr Leu Lys Pro Thr Gln
130 135 140

Asp Pro Ala Glu Cys Ile Lys Glu Met Lys Ser Leu Met Trp Ile Tyr
145 150 155 160

Val Leu Val Gly Asn Ile Ile Arg Gly Ile Gly Glu Thr Pro Ile Met
165 170 175

Pro Leu Gly Ile Ser Tyr Ile Glu Asp Phe Ala Lys Ser Glu Asn Ser
180 185 190

Pro Leu Tyr Ile Gly Ile Leu Glu Thr Gly Lys Val Phe Gly Pro Ile
195 200 205

Val Gly Leu Leu Leu Gly Ser Phe Cys Ala Ser Ile Tyr Val Asp Thr
210 215 220

Gly Ser Val Asn Thr Asp Asp Leu Thr Ile Thr Pro Thr Asp Thr Arg
225 230 235 240

Trp Val Gly Ala Trp Trp Ile Gly Phe Leu Ile Cys Ala Gly Val Asn
245 250 255

Ile Leu Ser Ser Ile Pro Phe Phe Phe Pro Lys Thr Leu Pro Lys
260 265 270

Glu Gly Leu Gln Asp Asp Val Asp Gly Thr Asn Asn Asp Lys Glu Glu
275 280 285

Lys His Arg Glu Lys Ala Lys Glu Glu Asn Arg Gly Ile Thr Lys Asp
290 295 300

Phe Leu Pro Phe Met Lys Ser Leu Ser Cys Asn Pro Ile Tyr Met Leu
305 310 315 320

Leu Ile Leu Thr Ser Val Leu Gln Ile Asn Ala Phe Ile Asn Met Phe
325 330 335

Thr Phe Leu Pro Lys Tyr Leu Glu Gln Gln Tyr Gly Lys Ser Thr Ala
340 345 350

Glu Val Val Leu Leu Ile Gly Val Tyr Asn Leu Pro Pro Ile Cys Ile
355 360 365

Gly Tyr Leu Leu Ile Gly Phe Ile Met Lys Lys Phe Lys Ile Thr Val
370 375 380

Lys Lys Ala Ala Tyr Met Ala Phe Cys Leu Ser Leu Phe Glu Tyr Leu
385 390 395 400

Leu Tyr Phe Leu His Phe Met Ile Thr Cys Asp Asn Phe Pro Val Ala
405 410 415

Gly Leu Thr Ala Leu Tyr Glu Gly Val His His Pro Leu Tyr Val Glu
420 425 430

Asn Lys Val Leu Ala Asp Cys Asn Arg Gly Cys Ser Cys Ser Thr Asn
435 440 445

Ser Trp Asp Pro Val Cys Gly Asp Asn Gly Leu Ala Tyr Met Ser Ala
450 455 460

Cys Leu Ala Gly Cys Lys Lys Ser Val Gly Thr Gly Thr Asn Met Val
465 470 475 480

Phe Gln Asn Cys Ser Cys Ile Arg Ser Ser Gly Asn Ser Ser Ala Val
485 490 495

Leu Gly Leu Cys Lys Lys Gly Pro Glu Cys Ala Asn Lys Leu Gln Tyr
500 505 510

Phe Leu Ile Met Ser Val Ile Gly Ser Phe Ile Tyr Ser Ile Thr Ala
515 520 525

Ile Pro Gly Tyr Met Val Leu Leu Arg Cys Ile Lys Pro Glu Lys Lys
530 535 540

Ser Leu Gly Ile Gly Leu His Ala Phe Cys Thr Arg Val Phe Ala Gly
545 550 555 560

Ile Pro Ala Pro Ile Tyr Phe Gly Ala Leu Ile Asp Arg Thr Cys Leu
565 570 575

His Trp Gly Thr Leu Lys Cys Gly Glu Pro Gly Ala Cys Arg Met Tyr
580 585 590

Asn Ile Asn Asn Phe Arg Arg Ile Tyr Leu Val Leu Pro Ala Ala Leu
595 600 605

Arg Gly Ser Ser Tyr Leu Pro Ala Leu Phe Ile Leu Ile Leu Met Arg
610 615 620

Lys Phe Gln Phe Pro Gly Glu Ile Asp Ser Ser Glu Thr Glu Leu Ala
625 630 635 640

Glu Met Lys Ile Thr Val Lys Lys Ser Glu Cys Thr Asp Val His Gly
645 650 655

Ser Pro Gln Val Glu Asn Asp Gly Glu Leu Lys Thr Arg Leu
660 665 670

<211> 669

<212> PRT

<213> Rattus rattus

<400> 25

Met Gly Asp Leu Glu Lys Gly Ala Ala Thr His Gly Ala Gly Cys Phe
1 5 10 15

Ala Lys Ile Lys Val Phe Leu Met Ala Leu Thr Cys Ala Tyr Val Ser
20 25 30

Lys Ser Leu Ser Gly Thr Phe Met Ser Ser Met Leu Thr Gln Ile Glu
35 40 45

Arg Gln Phe Gly Ile Pro Thr Ala Ile Val Gly Phe Ile Asn Gly Ser
50 55 60

Phe Glu Ile Gly Asn Leu Leu Ile Ile Phe Val Ser Tyr Phe Gly
65 70 75 80

Met Lys Leu His Arg Pro Ile Val Ile Gly Val Gly Cys Ala Val Met
85 90 95

Gly Leu Gly Cys Phe Ile Ile Ser Leu Pro His Phe Leu Met Gly Arg
100 105 110

Tyr Glu Tyr Glu Thr Thr Ile Leu Pro Thr Ser Asn Leu Ser Ser Asn
115 120 125

Ser Phe Leu Cys Met Glu Asn Gln Thr Gln Thr Leu Asn Pro Ala Gln
130 135 140

Asp Pro Ala Glu Cys Val Lys Glu Val Lys Ser Leu Met Trp Ile Tyr
145 150 155 160

Val Leu Val Gly Asn Ile Ile Arg Gly Ile Gly Glu Thr Pro Ile Met
165 170 175

Pro Leu Gly Val Ser Tyr Ile Glu Asn Phe Ala Lys Ser Glu Asn Ser
180 185 190

Pro Leu Tyr Ile Gly Ile Leu Glu Thr Gly Lys Met Ile Gly Pro Ile
195 200 205

Phe Gly Leu Leu Leu Gly Ser Phe Cys Ala Ser Ile Tyr Val Asp Thr
210 215 220

Gly Ser Val Asn Thr Asp Asp Leu Thr Ile Thr Pro Thr Asp Ile Arg
225 230 235 240

Trp Val Gly Ala Trp Trp Ile Gly Phe Leu Val Cys Ala Gly Val Asn
245 250 255

Ile Leu Ile Ser Ile Pro Phe Phe Phe Pro Lys Thr Leu Pro Lys
260 265 270

Glu Gly Leu Gln Glu Asn Val Asp Gly Thr Glu Asn Ala Lys Glu Glu
275 280 285

Ser Thr Glu Lys Arg Pro Arg Lys Lys Asn Arg Gly Ile Thr Lys Asp
290 295 300

Phe Phe Pro Phe Leu Lys Ser Pro Val Leu Gln Pro Asp Leu His Ala
305 310 315 320

Val His Pro Tyr Lys Val Leu Gln Val Asn Ala Phe Asn Ile Tyr Phe
325 330 335

Ser Phe Leu Pro Lys Tyr Leu Glu Asn Gln Tyr Gly Lys Ser Thr Ala
340 345 350

Glu Val Ile Phe Leu Met Gly Val Tyr Asn Leu Pro Ala Ile Cys Ile
355 360 365

Gly Tyr Leu Ile Ala Gly Phe Met Met Lys Lys Phe Lys Ile Thr Val
370 375 380

Lys Thr Ala Ala Phe Leu Arg Phe Cys Leu Ser Leu Ser Glu Tyr Ser
385 390 395 400

Phe Gly Phe Cys Asn Phe Leu Ile Thr Cys Asp Asn Val Pro Val Ala
405 410 415

Gly Leu Thr Asn Ser Tyr Glu Arg Asp Gln Lys Pro Leu Tyr Leu Glu
420 425 430

Asn Asn Val Leu Ala Asp Cys Asn Thr Arg Cys Ser Cys Leu Thr Lys
435 440 445

Thr Trp Asp Pro Val Cys Gly Asp Asn Gly Leu Ala Tyr Met Ser Ala
450 455 460

Cys Leu Ala Gly Cys Glu Lys Ser Val Gly Thr Gly Thr Asn Met Val
465 470 475 480

Phe His Asn Cys Ser Cys Ile Gln Ser Pro Gly Asn Ser Ser Ala Val
485 490 495

Leu Gly Leu Cys Asn Lys Gly Pro Glu Cys Thr Asn Lys Leu Gln Tyr
500 505 510

Leu Leu Ile Leu Ser Gly Phe Leu Ser Ile Leu Tyr Ser Phe Ala Ala
515 520 525

Ile Pro Gly Tyr Met Val Phe Leu Arg Cys Ile Lys Ser Glu Glu Lys
530 535 540

Ser Leu Gly Ile Gly Ile His Ala Phe Cys Ile Arg Val Phe Ala Gly
545 550 555 560

Ile Pro Ala Pro Ile Tyr Phe Gly Ala Leu Ile Asp Arg Thr Cys Leu
565 570 575

His Trp Gly Thr Gln Lys Cys Gly Ala Pro Gly Arg Arg Met Tyr Asp
580 585 590

Ile Asn Ser Phe Arg Arg Ile Tyr Leu Gly Met Ser Ala Ala Leu Arg
595 600 605

Gly Ser Ser Tyr Leu Pro Ala Phe Val Ile Val Ile Leu Thr Arg Lys
610 615 620

Phe Ser Leu Pro Gly Lys Ile Asn Ser Ser Glu Met Glu Ile Ala Glu
625 630 635 640

Met Lys Leu Thr Glu Lys Glu Ser Gln Cys Thr Asp Val His Arg Asn
645 650 655

Pro Lys Phe Lys Asn Asp Gly Glu Leu Lys Thr Lys Leu

660

665

<210> 26

<211> 670

<212> PRT

<213> Rattus rattus

<400> 26

Met Glu Glu Thr Glu Lys Lys Ile Ala Thr Gln Glu Gly Arg Leu Phe
1 5 10 15

Ser Lys Met Lys Val Phe Leu Leu Ser Leu Thr Cys Ala Cys Leu Thr
20 25 30

Lys Ser Leu Ser Gly Val Tyr Met Asn Ser Met Leu Thr Gln Ile Glu
35 40 45

Arg Gln Phe Asp Ile Ser Thr Ser Val Ala Gly Leu Ile Asn Gly Ser
50 55 60

Phe Glu Ile Gly Asn Leu Phe Phe Ile Val Phe Val Ser Tyr Phe Gly
65 70 75 80

Thr Lys Leu His Arg Pro Val Val Ile Gly Ile Gly Cys Val Ile Met
85 90 95

Gly Leu Gly Cys Leu Leu Met Ser Leu Pro His Phe Phe Met Gly Arg
100 105 110

Tyr Glu Tyr Glu Thr Thr Ile Ser Pro Thr Gly Asn Leu Ser Ser Asn
115 120 125

Ser Phe Leu Cys Met Glu Asn Arg Thr Gln Thr Leu Lys Pro Thr Gln
130 135 140

Asp Pro Ala Glu Cys Val Lys Glu Met Lys Ser Leu Met Trp Ile Cys
145 150 155 160

Val Met Val Gly Asn Ile Ile Arg Gly Ile Gly Glu Thr Pro Ile Val
165 170 175

Pro Leu Gly Ile Ser Tyr Ile Glu Asp Phe Ala Lys Ser Glu Asn Ser
180 185 190

Pro Leu Tyr Ile Gly Ile Leu Glu Met Gly Lys Val Ala Gly Pro Ile
195 200 205

Phe Gly Leu Leu Leu Gly Ser Tyr Cys Ala Gln Ile Tyr Val Asp Ile
210 215 220

Gly Ser Val Asn Thr Asp Asp Leu Thr Ile Thr Pro Ser Asp Thr Arg
225 230 235 240

Trp Val Gly Ala Trp Trp Ile Gly Phe Leu Val Cys Ala Gly Val Asn
245 250 255

Ile Leu Thr Ser Ile Pro Phe Phe Leu Pro Lys Ala Leu Pro Lys
260 265 270

Lys Gly Gln Gln Glu Asn Val Ala Val Thr Lys Asp Gly Lys Val Glu
275 280 285

Lys Tyr Gly Gly Gln Ala Arg Glu Glu Asn Leu Gly Ile Thr Lys Asp
290 295 300

Phe Leu Thr Phe Met Lys Arg Leu Phe Cys Asn Pro Ile Tyr Met Leu
305 310 315 320

Phe Ile Leu Thr Ser Val Leu Gln Val Asn Gly Phe Ile Asn Lys Phe
325 330 335

Thr Phe Leu Pro Lys Tyr Leu Glu Gln Gln Tyr Gly Lys Ser Thr Ala
340 345 350

Glu Ala Ile Phe Leu Ile Gly Val Tyr Ser Leu Pro Pro Ile Cys Leu
355 360 365

Gly Tyr Leu Ile Gly Gly Phe Ile Met Lys Lys Phe Lys Ile Thr Val
370 375 380

Lys Lys Ala Ala Tyr Leu Ala Phe Cys Leu Ser Val Phe Glu Tyr Leu
385 390 395 400

Leu Phe Leu Cys His Phe Met Leu Thr Cys Asp Asn Ala Ala Val Ala
405 410 415

Gly Leu Thr Thr Ser Tyr Lys Gly Val Gln His Gln Leu His Val Glu
420 425 430

Ser Lys Val Leu Ala Asp Cys Asn Thr Arg Cys Ser Cys Ser Thr Asn
435 440 445

Thr Trp Asp Pro Val Cys Gly Asp Asn Gly Val Ala Tyr Met Ser Ala
450 455 460

Cys Leu Ala Gly Cys Lys Lys Phe Val Gly Thr Gly Thr Asn Met Val
465 470 475 480

Phe Gln Asp Cys Ser Cys Ile Gln Ser Leu Gly Asn Ser Ser Ala Val
485 490 495

Leu Gly Leu Cys Lys Lys Gly Pro Glu Cys Ala Asn Arg Leu Gln Tyr
500 505 510

Phe Leu Ile Leu Thr Ile Ile Ser Phe Ile Tyr Ser Leu Thr Ala
515 520 525

Ile Pro Gly Tyr Met Val Phe Leu Arg Cys Val Lys Ser Glu Glu Lys
530 535 540

Ser Leu Gly Val Gly Leu His Thr Phe Cys Ile Arg Val Phe Ala Gly
545 550 555 560

Ile Pro Ala Pro Val Tyr Phe Gly Ala Leu Ile Asp Arg Thr Cys Leu
565 570 575

His Trp Gly Thr Leu Lys Cys Gly Gln Arg Gly Ala Cys Arg Met Tyr
580 585 590

Asp Ile Asn Ser Phe Arg His Ile Tyr Leu Gly Leu Pro Ile Ala Leu
595 600 605

Arg Gly Ser Ser Tyr Leu Pro Ala Phe Phe Ile Leu Ile Leu Met Arg
610 615 620

Lys Phe Gln Phe Pro Gly Asp Ile Asp Ser Ser Ala Thr Asp His Thr
625 630 635 640

Glu Met Met Leu Gly Glu Lys Glu Ser Glu His Thr Asp Val His Gly

645

650

655

Ser Pro Gln Val Glu Asn Asp Gly Glu Leu Lys Thr Lys Leu
660 665 670

<210> 27
<211> 670
<212> PRT
<213> Homo sapiens

<400> 27

Met Gly Glu Thr Glu Lys Arg Ile Glu Thr His Arg Ile Arg Cys Leu
1 5 10 15

Ser Lys Leu Lys Met Phe Leu Leu Ala Ile Thr Cys Ala Phe Val Ser
20 25 30

Lys Thr Leu Ser Gly Ser Tyr Met Asn Ser Met Leu Thr Gln Ile Glu
35 40 45

Arg Gln Phe Asn Ile Pro Thr Ser Leu Val Gly Phe Ile Asn Gly Ser
50 55 60

Phe Glu Ile Gly Asn Leu Leu Ile Ile Phe Val Ser Tyr Phe Gly
65 70 75 80

Thr Lys Leu His Arg Pro Ile Met Ile Gly Ile Gly Cys Val Val Met
85 90 95

Gly Leu Gly Cys Phe Leu Lys Ser Leu Pro His Phe Leu Met Asn Gln
100 105 110

Tyr Glu Tyr Glu Ser Thr Val Ser Val Ser Gly Asn Leu Ser Ser Asn
115 120 125

Ser Phe Leu Cys Met Glu Asn Gly Thr Gln Ile Leu Arg Pro Thr Gln
130 135 140

Asp Pro Ser Glu Cys Thr Lys Glu Val Lys Ser Leu Met Trp Val Tyr
145 150 155 160

Val Leu Val Gly Asn Ile Val Arg Gly Met Gly Glu Thr Pro Ile Leu
165 170 175

Pro Leu Gly Ile Ser Tyr Ile Glu Asp Phe Ala Lys Phe Glu Asn Ser
180 185 190

Pro Leu Tyr Ile Gly Leu Val Glu Thr Gly Ala Ile Ile Gly Pro Leu
195 200 205

Ile Gly Leu Leu Leu Ala Ser Phe Cys Ala Asn Val Tyr Val Asp Thr
210 215 220

Gly Phe Val Asn Thr Asp Asp Leu Ile Ile Thr Pro Thr Asp Thr Arg
225 230 235 240

Trp Val Gly Ala Trp Trp Phe Gly Phe Leu Ile Cys Ala Gly Val Asn
245 250 255

Val Leu Thr Ala Ile Pro Phe Phe Leu Pro Asn Thr Leu Pro Lys
260 265 270

Glu Gly Leu Glu Thr Asn Ala Asp Ile Ile Lys Asn Glu Asn Glu Asp
275 280 285

Lys Gln Lys Glu Glu Val Lys Lys Glu Lys Tyr Gly Ile Thr Lys Asp
290 295 300

Phe Leu Pro Phe Met Lys Ser Leu Ser Cys Asn Pro Ile Tyr Met Leu
305 310 315 320

Phe Ile Leu Val Ser Val Ile Gln Phe Asn Ala Phe Val Asn Met Ile
325 330 335

Ser Phe Met Pro Lys Tyr Leu Glu Gln Gln Tyr Gly Ile Ser Ser Ser
340 345 350

Asp Ala Ile Phe Leu Met Gly Ile Tyr Asn Leu Pro Pro Ile Cys Ile
355 360 365

Gly Tyr Ile Ile Gly Gly Leu Ile Met Lys Lys Phe Lys Ile Thr Val
370 375 380

Lys Gln Ala Ala His Ile Gly Cys Trp Leu Ser Leu Leu Glu Tyr Leu
385 390 395 400

Leu Tyr Phe Leu Ser Phe Leu Met Thr Cys Glu Asn Ser Ser Val Val
405 410 415

Gly Ile Asn Thr Ser Tyr Glu Gly Ile Pro Gln Asp Leu Tyr Val Glu
420 425 430

Asn Asp Ile Phe Ala Asp Cys Asn Val Asp Cys Asn Cys Pro Ser Lys
435 440 445

Ile Trp Asp Pro Val Cys Gly Asn Asn Gly Leu Ser Tyr Leu Ser Ala
450 455 460

Cys Leu Ala Gly Cys Glu Thr Ser Ile Gly Thr Gly Ile Asn Met Val
465 470 475 480

Phe Gln Asn Cys Ser Cys Ile Gln Thr Ser Gly Asn Ser Ser Ala Val
485 490 495

Leu Gly Leu Cys Asp Lys Gly Pro Asp Cys Ser Leu Met Leu Gln Tyr
500 505 510

Phe Leu Ile Leu Ser Ala Met Ser Ser Phe Ile Tyr Ser Leu Ala Ala
515 520 525

Ile Pro Gly Tyr Met Val Leu Leu Arg Cys Met Lys Ser Glu Glu Lys
530 535 540

Ser Leu Gly Val Gly Leu His Thr Phe Cys Thr Arg Val Phe Ala Gly
545 550 555 560

Ile Pro Ala Pro Ile Tyr Phe Gly Ala Leu Met Asp Ser Thr Cys Leu
565 570 575

His Trp Gly Thr Leu Lys Cys Gly Glu Ser Gly Ala Cys Arg Ile Tyr
580 585 590

Asp Ser Thr Thr Phe Arg Tyr Ile Tyr Leu Gly Leu Pro Ala Ala Leu
595 600 605

Arg Gly Ser Ser Phe Val Pro Ala Leu Ile Ile Leu Ile Leu Leu Arg
610 615 620

Lys Cys His Leu Pro Gly Glu Asn Ala Ser Ser Gly Thr Glu Leu Ile

625

630

635

640

Glu Thr Lys Val Lys Gly Lys Glu Asn Glu Cys Lys Asp Ile Tyr Gln
645 650 655

Lys Ser Thr Val Leu Lys Asp Asp Glu Leu Lys Thr Lys Leu
660 665 670

<210> 28
<211> 643
<212> PRT
<213> Homo sapiens

<400> 28

Met Gly Leu Leu Pro Lys Leu Gly Val Ser Gln Gly Ser Asp Thr Ser
1 5 10 15

Thr Ser Arg Ala Gly Arg Cys Ala Arg Ser Val Phe Gly Asn Ile Lys
20 25 30

Val Phe Val Leu Cys Gln Gly Leu Leu Gln Leu Cys Gln Leu Leu Tyr
35 40 45

Ser Ala Tyr Phe Lys Ser Ser Leu Thr Thr Ile Glu Lys Arg Phe Gly
50 55 60

Leu Ser Ser Ser Ser Gly Leu Ile Ser Ser Leu Asn Glu Ile Ser
65 70 75 80

Asn Ala Ile Leu Ile Ile Phe Val Ser Tyr Phe Gly Ser Arg Val His
85 90 95

Arg Pro Arg Leu Ile Gly Ile Gly Gly Leu Phe Leu Ala Ala Gly Ala
100 105 110

Phe Ile Leu Thr Leu Pro His Phe Leu Ser Glu Pro Tyr Gln Tyr Thr
115 120 125

Leu Ala Ser Thr Gly Asn Asn Ser Arg Leu Gln Ala Glu Leu Cys Gln
130 135 140

Lys His Trp Gln Asp Leu Pro Pro Ser Lys Cys His Ser Thr Thr Gln
145 150 155 160

Asn Pro Gln Lys Glu Thr Ser Ser Met Trp Gly Leu Met Val Val Ala
165 170 175

Gln Leu Leu Ala Gly Ile Gly Thr Val Pro Ile Gln Pro Phe Gly Ile
180 185 190

Ser Tyr Val Asp Asp Phe Ser Glu Pro Ser Asn Ser Pro Leu Tyr Ile
195 200 205

Ser Ile Leu Phe Ala Ile Ser Val Phe Gly Pro Ala Phe Gly Tyr Leu
210 215 220

Leu Gly Ser Ile Met Leu Gln Ile Phe Val Asp Tyr Gly Arg Val Asn
225 230 235 240

Thr Ala Ala Val Asn Leu Val Pro Gly Asp Pro Arg Trp Ile Gly Ala
245 250 255

Trp Trp Leu Gly Leu Leu Ile Ser Ser Ala Leu Leu Val Leu Thr Ser
260 265 270

Phe Pro Phe Phe Phe Pro Arg Ala Met Pro Ile Gly Ala Lys Arg
275 280 285

Ala Pro Ala Thr Ala Asp Glu Ala Arg Lys Leu Glu Glu Ala Lys Ser
290 295 300

Arg Gly Ser Leu Val Asp Phe Ile Lys Arg Phe Pro Cys Ile Phe Leu
305 310 315 320

Arg Leu Leu Met Asn Ser Leu Phe Val Leu Val Val Leu Ala Gln Cys
325 330 335

Thr Phe Ser Ser Val Ile Ala Gly Leu Ser Thr Phe Leu Asn Lys Phe
340 345 350

Leu Glu Lys Gln Tyr Gly Thr Ser Ala Ala Tyr Ala Asn Phe Leu Ile
355 360 365

Gly Ala Val Asn Leu Pro Ala Ala Leu Gly Met Leu Phe Gly Gly
370 375 380

Ile Leu Met Lys Arg Phe Val Phe Ser Leu Gln Thr Ile Pro Arg Ile
385 390 395 400

Ala Thr Thr Ile Ile Thr Ile Ser Met Ile Leu Cys Val Pro Leu Phe
405 410 415

Phe Met Gly Cys Ser Thr Pro Thr Val Ala Glu Val Tyr Pro Pro Ser
420 425 430

Thr Ser Ser Ser Ile His Pro Gln Ser Pro Ala Cys Arg Arg Asp Cys
435 440 445

Ser Cys Pro Asp Ser Ile Phe His Pro Val Cys Gly Asp Asn Gly Ile
450 455 460

Glu Tyr Leu Ser Pro Cys His Ala Gly Cys Ser Asn Ile Asn Met Ser
465 470 475 480

Ser Ala Thr Ser Lys Gln Leu Ile Tyr Leu Asn Cys Ser Cys Val Thr
485 490 495

Gly Gly Ser Ala Ser Ala Lys Thr Gly Ser Cys Pro Val Pro Cys Ala
500 505 510

His Phe Leu Leu Pro Ala Ile Phe Leu Ile Ser Phe Val Ser Leu Ile
515 520 525

Ala Cys Ile Ser His Asn Pro Leu Tyr Met Met Val Leu Arg Val Val
530 535 540

Asn Gln Glu Glu Lys Ser Phe Ala Ile Gly Val Gln Phe Leu Leu Met
545 550 555 560

Arg Leu Leu Ala Trp Leu Pro Ser Pro Ala Leu Tyr Gly Leu Thr Ile
565 570 575

Asp His Ser Cys Ile Arg Trp Asn Ser Leu Cys Leu Gly Arg Arg Gly
580 585 590

Ala Cys Ala Tyr Tyr Asp Asn Asp Ala Leu Arg Asp Arg Tyr Leu Gly
595 600 605

Leu Gln Met Gly Tyr Lys Ala Leu Gly Met Leu Leu Leu Cys Phe Ile

610

615

620

Ser Trp Arg Val Lys Lys Asn Lys Glu Tyr Asn Val Gln Lys Ala Ala
625 630 635 640

Gly Leu Ile

<210> 29
<211> 384
<212> PRT
<213> Artificial

<220>
<223> Consensus Sequence

<400> 29

Gly Glu Ala Cys Phe Ile Lys Phe Leu Leu Ala Leu Ala Leu Gly Tyr
1 5 10 15

Met Ser Leu Thr Gln Ile Glu Arg Arg Phe Ile Ser Ser Val Gly Leu
20 25 30

Ile Gly Ser Phe Glu Ile Gly Asn Leu Leu Leu Ile Phe Val Ser Tyr
35 40 45

Phe Gly Lys Leu His Arg Pro Ile Gly Gly Cys Met Gly Leu Gly Leu
50 55 60

Leu Pro His Phe Leu Met Gly Tyr Glu Tyr Glu Asn Ser Leu Cys Asn
65 70 75 80

Ser Leu Pro Asp Glu Cys Lys Glu Ser Leu Met Trp Ile Tyr Val Val
85 90 95

Gly Asn Ile Leu Arg Gly Ile Gly Glu Thr Pro Ile Pro Leu Gly Ile
100 105 110

Ser Tyr Ile Asp Asp Phe Ala Lys Glu Asn Ser Pro Leu Tyr Ile Gly
115 120 125

Ile Leu Thr Gly Pro Gly Leu Leu Gly Ser Cys Ala Ile Tyr Val Asp
130 135 140

Gly Val Asn Thr Asp Leu Ile Thr Pro Asp Pro Arg Trp Val Gly Ala
 145 150 155 160

Trp Trp Gly Phe Leu Cys Ala Gly Leu Ser Ile Pro Phe Phe Phe Phe
 165 170 175

Pro Lys Leu Pro Lys Gly Val Lys Asp Phe Lys Leu Leu Asn Pro Tyr
 180 185 190

Leu Leu Val Gln Asn Gly Thr Phe Leu Pro Lys Tyr Leu Glu Gln Gln
 195 200 205

Tyr Gly Ser Ser Ala Phe Leu Gly Leu Pro Cys Gly Gly Gly Ile Met
 210 215 220

Lys Lys Phe Lys Val Ala Ala Leu Ala Ser Leu Tyr Leu Leu Phe Cys
 225 230 235 240

Asn Val Ala Gly Leu Thr Ser Tyr Gly Glu Ala Asp Cys Asn Cys Ser
 245 250 255

Cys Trp Pro Val Cys Gly Asn Gly Tyr Ser Ala Cys Leu Ala Gly Cys
 260 265 270

Ser Gly Thr Gly Asn Val Phe Asn Cys Ser Cys Ile Gly Asn Ser Ser
 275 280 285

Ala Val Leu Gly Cys Lys Pro Cys Leu Tyr Phe Leu Ser Phe Ile Ser
 290 295 300

Leu Ile Pro Gly Tyr Met Val Leu Arg Cys Val Lys Glu Glu Lys Ser
 305 310 315 320

Leu Ala Gly His Arg Leu Ala Gly Ile Pro Ala Pro Ile Tyr Phe Gly
 325 330 335

Ala Leu Ile Asp Thr Cys Leu His Trp Gly Thr Cys Gly Gly Ala Cys
 340 345 350

Arg Tyr Asp Phe Arg Tyr Leu Gly Leu Ala Leu Arg Ser Leu Ile Leu
 355 360 365

Leu Arg Lys Pro Ile Ser Ser Glu Lys Glu Ser Thr His Asp Glu Thr

370

375

380